REMARKS

I. Background Information

The following references of record are discussed below:

(1) Matsuda et al. U.S. Patent No. 6,534,232 (hereafter US '232);

(2) Matsuda et al. JP Patent Publication No. 2001-027829 (hereafter JP '829);

(3) Hamano et al. U.S. Patent No. 6,500,594 (hereafter US '594);

(4) Yuasa et al. WO 00/52533 (hereafter WO '533);

(5) Yuasa et al. U.S. Patent No. 6,579,653 (hereafter US '653);

(6) Shintani et al. U.S. Patent No. 5,204,204 (hereafter US '204); and

(7) Handbook of Imaging Materials, Diamond pp. 162-170 or 222-224 (hereafter Diamond).

A. US '232 and JP '829

It is noted that JP '829, published on January 30, 2001, is based on Japanese Patent Application No. 11-128879 (JP '879), filed on May 10, 1999. It is also noted that US '232 claims priority under 35 U.S.C. § 119(a)-(d) to JP '879.

B. Patent Family Information for US '594

US '594 belongs to a patent family of four members. The following table provides publication numbers, publication dates, and filing dates for each member of the US '594 family.

Publication	Publication Date	Filing Date
US 2002/0106573 (US '573)	August 8, 2002	October 17, 2001
US 6,500,594 (US '594)	December 31, 2002	**October 17, 2001**
JP 2002-182428	June 26, 2002	December 12, 2000
CN 1359033	July 17, 2002	December 12, 2000

US '573 and US '594 are based on U.S. Patent Application No. 09/978,031 (US '031), which has a U.S. filing date of October 17, 2001.

As noted above, the present application has a U.S. filing date of March 4, 2002.

A comparison of the publication dates of the US '594 family members with the filing date of the present application shows that none of the US '594 family members qualify as prior art under 35 U.S.C. § 102(a)-(b).

US '594 and US '573 are based on US '031, filed on October 17, 2001, and both have a 102(e)-date of October 17, 2001. Accordingly, the disclosures of US '594 and US '573 may qualify as prior art under 35 U.S.C. § 102(e)(1)-(2).

C. Patent Family Information for WO '533

The following Table shows that WO '533 and US '594 are patent equivalents.

Publication	Pub. Date	Filed
WO 00/52533 (WO '533)	September 8, 2000	March 2, 2000
US 2005/0053858	March 10, 2005	April 24, 2003
US 6,579,653 (US '653)	June 17, 2003	September 14, 2001
EP 1168088	September 29, 2004	March 2, 2000
EP 1168088	January 2, 2002	March 2, 2000
CN 1342274	March 27, 2002	March 2, 2000
CN 1342274	March 27, 2002	March 2, 2000

II. Perfection of Priority

The present application was filed in the U.S. Patent Office on March 4, 2002, and claims priority under 35 U.S.C. § 119(a)-(d) to Japanese Patent Application No. 2001-059113 (JP '113), which was filed in the Japanese Patent Office on March 2, 2001. Applicants concurrently file an English translation of JP '113 with a signed statement by Ms. Tomoko Drummond that the English translation is true and correct. Applicants request that the Examiner acknowledge that the claim of priority to JP '113 has now been perfected.

III. Outstanding Rejections

The rejections of:

(1) Claims 1, 4-6, 9-10, 13, and 17-20 under 35 U.S.C. § 103(a) over US '232 (JP '829) in view of US '594, and further in view of WO '533 (US '653);

(2) Claim 5 under 35 U.S.C. § 103(a) over US '232 (JP '829) in view of US '594, and further in view of WO '533 (US '653), and further in view of Diamond;

(3) Claims 2-3 and 11 under 35 U.S.C. § 103(a) over US '232 (JP '829) in view of US '594, and further in view of WO '533 (US '653), and further in view of US '204; and;

(4) Claims 14-16 under 35 U.S.C. § 103(a) over US '232 (JP '829) in view of US '594, and further in view of Diamond

are all respectfully traversed.

Inspection of the outstanding rejections shows that the Office has relied primarily on the disclosure of US '232, and has relied secondarily on the disclosures of US '594 and WO '533. Both US '204 and Diamond appear to be tertiary references that the Office has relied upon the reject various dependent claims.

Therefore, the basis for all rejections appears to depend upon the disclosures of US '232, US '594, and WO '533. However, Applicants note that US '594 is now no longer available for consideration. In the absence US '594, it is believed that there can be no issue of obviousness. Additionally, Applicants believe that there is sufficient evidence of record showing that the claimed carrier is unobvious over the references of record. Applicants believe that this position will become clear upon consideration of the following.

A. Claimed Invention and Differences between Cited References

The claimed carrier for a developer for developing an electrostatic image, comprises **core particles having a weight average particle diameter of 48 to 50 μm**, and a resin layer comprising a crosslinked silicone resin;

wherein said resin layer covers each of said core particles and comprises **carbon particles having a number average particle diameter of 0.01-0.1 μm.**

There are two differences between the claimed carrier and the carrier disclosed in US '232.

First, US '232 does not disclose or suggest a carrier comprising a resin layer that covers each of said core particles and comprises carbon particles having a number average particle diameter of 0.01-0.1 μm.

Second, US '232 does not disclose a carrier comprising core particles having a weight average particle diameter of 48 to 50 μm.

In view of these two deficiencies, the Office has cited US '594 in order to provide the suggestion for the carbon particle number average particle diameter of 0.01-0.1 μm, and the disclosure of WO '533 (US '653) for the suggestion of the core particle weight average diameter of 48 to 50 μm.

B. Discussion

It is noted that the Office has previously taken the position that the carrier disclosed in US '232 "inherently has carbon particles having a number average diameter of 0.01 to 0.1 μm" (see September 27, 2004, Office Action, page 5, lines 10-12). Since the Office has not relied upon US '232 for a suggestion of the claimed carbon particle size, Applicants consider this to be an implicit admission that US '232 does not suggest a carrier comprising the claimed carbon particle size. Support for this implicit admission can be gleaned from the

Office's reliance on the disclosure of US '594 in order to provide the suggestion for the carbon particle size. However, US '594 should be withdrawn from consideration.

As noted above, US '594 is based on US '031, which was filed on October 17, 2001. Accordingly, US '594 has a "102(e)-date" of October 17, 2001. However, the present application claims priority to JP '113, which was filed in the Japanese Patent Office on March 2, 2001. Applicants file concurrently herewith an English translation of JP '113, along with a statement that the translation of the same is true and accurate. Consequently, Applicants request that the Examiner acknowledge that Applicants have now perfected their claim of priority to JP '113. Since the filing date of JP '113 antedates the "102(e)-date" of US '594, US '594 must be withdrawn from consideration. Since US '594 must be withdrawn from consideration, the Office can no longer rely upon the alleged suggestion contained therein, i.e., carbon particle size.

While it may be true that the Office has previously asserted that US '232 inherently discloses the same carbon particle size, Applicants note that there can be no implicit suggestion for the claimed carbon particle size. Why? Applicants have previously noted that the carbon particle size can be controlled by the varying the dispersion time and the coating temperature (see Amendment filed August 18, 2004, pages 9-10 and Amendment filed September 29, 2003, pages 6-9). Since US '232 does not disclose the manner in which the carbon particle is dispersed in the resin or the coating temperature, then there can be no suggestion gleaned from this disclosure that the carbon size can be controlled in a manner as currently claimed. Even if the Office was to take the position that there is a suggestion, remote though it may be, the Office must consider the evidence of record showing the improvements achieved when the carbon particle size is maintained within the claimed range.

The Examiner's attention is directed to the data on page 28 of the present Specification, as presented in Table 4, which is reproduced below.

Ex. No.	CS[a]	Resist.[b]	ID[c]	RR[d]	Others
1	0.04	2.0×10^{13}	1.41	4	No problems
2	0.04	1.5×10^{13}	1.45	5	No problems
Comp. 1	0.007	7.9×10^{15}	1.19	4	Edge effect
Comp. 2	0.16	5.0×10^{9}	1.50	3	White spots

[a]CS: Number average particle diameter of carbon (μm). [b]Resist.: Specific resistance of carrier (Ω cm). [c]ID: Image Density. [d]RR: Rank of reproducibility of fine line image.

Inspection of the data shows clearly that when the carbon particle size is outside the claimed range that an "edge effect" or "white spots" occur.

Additionally, inspection of the data presented in Durability Tests I and II (pages 22-23) and Figs. 1 and 2, see below, shows the superiority of the developer system comprising the claimed carrier. In the case of developer (I) (see page 21), an additional 20,000 copies may be obtained, and reduced carrier deposition is observed when compared to conventional developers (page 23, lines 1-5, Fig. 1). While in the case of developer (II), "the recovery and recycling of the carrier as well as the toner gave significant [improvement] in prevention of background stains throughout the reproduction of 300,000 copies (page 23, line 34 – page 24, line 3, Fig. 2).

FIG. 1

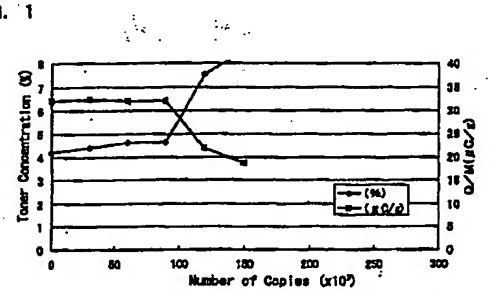
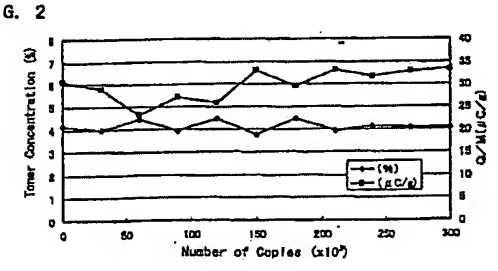


FIG. 2



These aspects are not at all suggested in the disclosure of US '232. It is kindly requested that the Examiner acknowledge these facts.

As noted above, US '232 does not disclose a carrier comprising core particles having a weight average particle diameter of 48 to 50 μm.

US '232 does disclose an average particle diameter of 44 μm (US '232 at col. 10, line 4), but nowhere is there a suggestion to employ the claimed core particles having a weight average particle diameter of 48 to 50 μm. The Office has recognized this deficiency by relying upon the disclosure of WO '533. But WO '533 (as evidenced by US '653 at col. 40, lines 12-32) does not specify the claimed core particle weight average diameter of 48 to 50 μm. Rather, WO '533 discloses that a carrier core material should have "an average particle size of 20 to 100 μm" (see US '654 at col. 40, line 13).

Applicants note that the claimed range is narrower than that which is disclosed in WO '533 (US '653).

In view of this fact, Applicants have filed concurrently herewith for the Examiner's consideration evidence showing criticality of the claimed core particle weight average diameter of 48 to 50 μm.

It is requested that the Examiner enter and consider the concurrently filed Declaration under 37 CFR § 1.132 by Declarant Hiroaki Matsuda, a named inventor of the present application.

It is noted that Declarant conducted the following experiments under his supervision during the period of from January 11, 2000 to March 10, 2000.

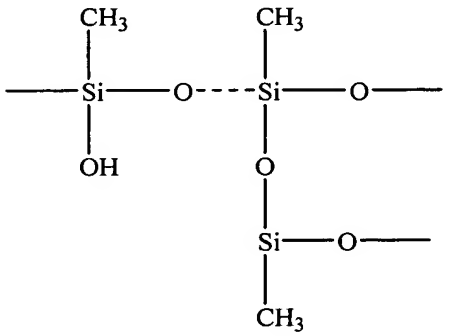
Experiment:

Carrier E and Carrier F were prepared in a manner described in the Examples of the present specification, provided that a weight average particle diameter of core particles are adjusted to be outside the range defined in the present invention, i.e., outside the range of 48 to 50 μm.

<Preparation of Coating Liquid (a) for Carrier>

The coating liquid (a) for carrier was prepared in the same manner as Coating Liquid (1) of Example 1 in the present specification.

Namely, 600 parts by weight of dimethylsilicone resin having constituting units of the formula (1) below (toluene solution, solid matter of 20% by weigh), 600 parts by weight of toluene, 9.7 parts by weight of γ-aminotriethoxysilane (KBE903, manufactured by Shin-Etsu Chemical Co., Ltd.), and 10.2 parts by weight of carbon black (BP-2000, manufactured by Cabot Company Ltd.) were mixed and thoroughly dispersed with a homomixer (jacket temperature: 35-40°C.) for 20 minutes to thereby obtain Coating Liquid (a).



Formula (1)

<Preparation of Carrier E>

Carrier core material E below	5000 parts by weight
Coating Liquid (a)	1220 parts by weight
Tin catalyst $(C_3H_7)_2Sn(OCOCH_3)_2$ (10% toluene solution)	16.8 parts by weight

The above carrier core material E was coated with the above coating liquid (a) by means of a coating device which performed a coating while rotating a rotary bottom disc in a fluidized bed to form a vortex. The temperature within the coating device was set to 70°C. The coated carrier was then heated at 300°C for 2 hours in an electric oven to thereby yield Carrier E. Carrier E had a specific resistance of $3.3\times10^{12}\Omega\cdot cm$.

The aforementioned carrier core material E had a weight average particle diameter of **42 μm**, saturation magnetization of 48 emu/g, residual magnetization of 50 G, a coercive force of 20 Oe, an apparent density of 2.49 g/cc, and fluidity of 25.8 sec/50 g.

<Preparation of Carrier F>

Carrier core material F below	5000 parts by weight
Coating Liquid (a)	1220 parts by weight
Tin catalyst $(C_3H_7)_2Sn(OCOCH_3)_2$ (10% toluene solution)	16.8 parts by weight

The above carrier core material F was coated with the above a coating liquid (a) by means of a coating device which performed coating while rotating a rotary bottom disc in a fluidized bed to form a vortex. The temperature within the coating device was set to 70°C. The coated carrier was then heated at 300°C for 2 hours in an electric oven to thereby yield Carrier F. Carrier F had a specific resistance of $1.2\times10^{14}\Omega\cdot$cm.

The aforementioned carrier core material F had a weight average particle diameter of **61 μm**, saturation magnetization of 93 emu/g, residual magnetization of 90 G, a coercive force of 12 Oe, an apparent density of 2.60 g/cc, and fluidity of 24.5 sec/50 g.

Evaluations:

The thus obtained Carriers E and F were evaluated in the same manner as in Examples 1 and 2 of the present specification. The results are shown in the following table. As comparisons, the results of Examples 1 and 2 of the present specification are also shown in the following table.

Table

	CS[a]	CPS[b]	Resist.[c]	ID[d]	RR[e]	Others
Carrier E	0.04	42	3.3×10^{12}	1.58	2	see note f
Carrier F	0.04	61	1.2×10^{14}	0.98	3	see note f
Ex. 1	0.04	48	2.0×10^{13}	1.41	4	no problem
Ex. 2	0.04	50	1.5×10^{13}	1.45	5	no problem

[a]CS: Number average particle diameter of carbon (μm). [b]Core particle Size (μm). [c]Resist.: Specific resistance of carrier (Ω cm). [d]ID: Image Density. [e]RR: Rank of reproducibility of fine line image. [f]Large amount of carrier deposition edge effect

As shown in Table 1, Carriers E and F, each of which has core particles having a volume average particle diameter of outside the range of 48 to 50 μm, have inferior properties to Examples 1 and 2 each of which has core particles having a volume average particle diameter of 48 to 50 μm.

As evidenced above, the carrier of the present invention, i.e., the carrier comprising core particles having a weight average particle diameter of 48 to 50 μm, and a resin layer comprising a crosslinked silicone resin which the resin layer covers each of the core particles and comprises carbon particles having a number average particle diameter of 0.01 to 0.1 μm, has a significant technical effect to, compared with a carrier having a weight average particle diameter of outside the range of 48 to 50 μm.

Namely, the technical features of the present invention are attained by all conditions of the present invention are satisfied.

C. Conclusion

As noted above, the basis for all rejections appears to depend upon the disclosures of US '232, US '594, and WO '533. However, US '594 is now no longer available for consideration. Additionally, US '232 does not suggest the claimed core or carbon particle sizes. Furthermore, Applicants have provided the Office with evidence showing that when the carbon particle size is outside the claimed range that image problems occur. WO '533

may disclose a core particle size that is broader than that which is presently claimed, but Applicants believe that the evidence showing criticality of the core particle size of 48 to 50 μm is sufficient to overcome any suggestion made by WO '533. Finally, it is noted that since neither US '204 nor Diamond rectify the deficiencies outlined above, it is believed that the claimed carrier is unobvious over the references of record.

It is kindly requested that the Examiner acknowledge the same and withdraw all the outstanding rejections.

IV. Specification Objection

The Specification is amended on pages 19 and 27 in order to provide antecedent basis for the claimed term "crosslinked silicone resin." It is requested that the Examiner withdraw this objection.

V. Rejoinder

In the event that the Examiner withdraw the outstanding rejections, and find the active claims to be allowable, it is respectfully requested that the Examiner rejoin the process (Claim 7) and apparatus (Claim 8) claims that include all the limitations of the allowed product claim.

VI. Request for Discussion with Examiner to Expedite Allowance

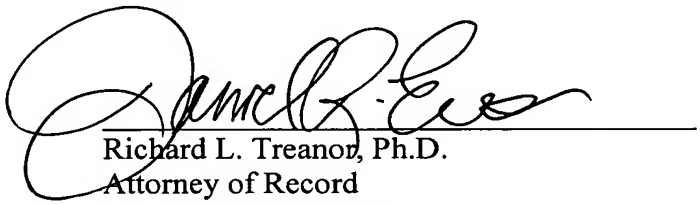
It is believed that the claims are in a condition for allowance. An early and favorable indication is earnestly solicited. Should the Examiner deem that a personal or telephonic interview would be helpful in advancing this application toward allowance, he is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

VII. Authorization to Charge Deposit Account Number

A response to the May 9, 2005 Office Action was due on August 9, 2005. Applicants file concurrently herewith a request for one-month extension of time under 37 CFR § 1.136 to September 9, 2005, with the appropriate fee under 37 CFR § 1.17. Should there exist a variance between that which is paid and owed, the Office is authorized to charge deposit account number 15-0030, in order to maintain pendency of the above-identified application.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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"RESPONSE UNDER 37 CFR 1.116-
EXPEDITED PROCEDURE EXAMINING
GROUP 1756"